CHEMICAL STRUCTURE AND PHYSIOLOGICAL ACTION.

The Chemistry of Synthetic Drugs. By P. May. Pp. xiii+229. (London: Longmans, Green and Co., 1911.) Price 7*s*. 6*d*. net.

IT is the expressed aim of the author of this volume to bring to the notice of chemists a branch of their subject affording scope for commercial application, and at the same time to interest medical men who may desire information concerning the chemical nature of the synthetic remedies presented to them. It is obvious that but little can safely be assumed as common ground of previous knowledge, in appealing to so wide a constituency of readers, and it was a good thought to begin with a glossary of technical terms: although it seems a little difficult to believe in the existence of the chemist who needs "antipyretic" or "narcotic" defined for him.

The author is to be congratulated on having presented a readable account of a difficult subject in 220 pages of text, not a few of which, moreover, are of necessity occupied by structural formulæ.

A selection of the more interesting and instructive classes of synthetic drugs for discussion probably afforded the only possibility of dealing, within such limits, with a subject in which recorded observations are overwhelmingly abundant and sound generalisations but few. The gain in interest for the non-specialist is well worth the loss in comprehensiveness. It is no disparagement of such a volume to say that it owes much to Fränkel's "Arzneimittelsynthese," as the author duly acknowledges. It could be wished, however, that he had leaned a little less heavily on that authority, particularly in some matters of pharmacological detail. For example, he follows Fränkel in stating that "pilocarpine closely resembles nicotine in many of its pharmacological effects" (p. 31), and accordingly regards as significant the possession by both of a five-membered ring. Of a writer on this subject for English readers one might expect such slight acquaintance with the work of the Cambridge school of physiology as would have sufficed to save him from accepting this statement. That the real pharmacological affinities of pilocarpine are with muscarine, with which it has no obvious community of structure, is one of the anomalies with which the subject bristles. The statement that "atropine and cocaine are closely related . . . in their physiological action, both of them causing dilatation of the pupil" (p. 86), is another instance of a tendency to attach importance to superficial resemblances, in the interests of a preconceived correspondence between structure and action. Mr. May's direct contact with the subject is obviously on the chemical side, but the description of the action of apomorphine as "quite opposite to that of morphine," is again a little crude, even for pharmacology at second hand.

The introductory chapter, dealing with the general theories of the physiological action of drugs, follows Fränkel closely, and would have gained by more attention to the development of theories since 1906. It is rather for its chapters dealing with special groups than as a general theoretical survey that the book should prove of value. Atropine and the tropeïnes, cocaine and the local anæsthetics, the morphine and isoquinoline groups of alkaloids, are all dealt with in a manner which should enable even the medical practitioner, with mere remnants of his student chemistry as a basis, to follow intelligently the aims of those engaged in producing new synthetic compounds in the different series. The citation of trade names provides a useful link with practical therapeutics. In treating of the isoquinoline alkaloids and the adrenaline series of bases, much space is devoted to recent, and particularly to English, publications: and if some of these seem thus to acquire more prominence in the general scheme than their intrinsic importance warrants, the fault is in the right direction; for, as the author points out, much of this work, as well as that on the organic arsenic and antimony compounds, has not before been collected into one volume.

On the whole, by what it omits as well as by the presentation of what it includes, the book succeeds in giving a more readable, if a slighter, account of the subject than its predecessors in the same field. A high degree of originality is excluded by the nature of the subject. The book would gain much by comparatively slight revision at the hands of someone directly acquainted with the physiological side of the subject, and the author may be recommended to seek such aid before publishing a new edition.

MECHANISM IN CRUCIFEROUS FLOWERS.

Prinzipien der Physikalisch-Kausalen Blütenbiologie. In ihrer Anwendung auf Bau und Entstehung des Blütenapparates der Cruciferen. Von Dr. A. Günthart. Pp. ix+172. (Jena: Gustav Fischer, 1910.) Price 4.50 marks.

THE floral construction of the Crucifer, repeated in so many familiar wild and cultivated plants, is at first sight so remarkably simple that the type is utilised possibly more than any other for the purposes of elementary botany, as presenting a handy symmetrical blossom with few parts and apparently little complication in relation to pollination. More careful observation, however, shows that this is by no means the case; the biological construction is definitely transversely zygomorphic, involving a duplicate mechanism; while morphological considerations show that the apparent simplicity has been attained by extreme reduction-specialisation from anthostrobiloid forms of which phylogenetic suggestions can only be traced in the allied families of the Capparidaceæ and Resedaceæ.

Dr. Günthart's volume constitues an extremely valuable and interesting contribution to the detailed investigation of the floral biology of these flowers. Representative types of twenty-five genera, arranged in thirteen groups, have been worked out by sectional methods, and are copiously illustrated by 136 schematic figures and diagrams. As the title indicates, the special point at issue is the determination of the extent to which any definite purpose or intention can be traced in the elaboration of complex floral mechanism devoted to cross-pollination by insect

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agency. The reading in of ideas involving purpose or forethought on the part of the plant has been so extremely general in œcological description of flowers, is so pleasing to the imagination, and proves so popular and difficult to escape from in elementary teaching, that a detailed analysis of such well-known Crucifer types as Matthiola, Raphanus, Alyssum, Aubrietia, &c., is particularly welcome.

Thus, among Crucifers generally, (1) the claws of the petals bend away from the lateral stamens as if to leave definite "entrance-slits" to the assumed nectar-containing pouches of the lateral sepals; (2) the anthers of the longer stamens are commonly twisted on their filaments so as to face round towards the adjacent lateral ones, as if with the intention of rubbing the entering proboscis of an insect; (3) the edges of the filaments are frequently extended into elaborate appendage-growths which are apparently intended to guide the proboscis of the insect-visitor exactly to the secreting surface. Such details are so obviously included under the heading of special adaptations to secure insect-pollination that the question of their actual origin demands most careful investigation.

The object of Dr. Günthart's work is to show that practically all subsidiary details of special mechanism and final adjustment may be traced back to a few fundamental tendencies in the floral construction, which, being given by phylogeny, work out on simple mechanical lines the construction details which are at first sight so purposeful. Such "active-factors" in the case of the Cruciferous flower are distinguished as:—

1. The tendency of the floral receptacle to extend in the transverse plane of the floral diagram, this factor controlling the dorsiventral insertion of the petals, the lateral apertures of the flower-tube, &c.
2. A tendency for the median sepals and adjacent parts to be "elevated" by a peculiar growth-extension in the median plane of the receptacle, which is responsible for "true" (primary) calyx-pouches and the increasing restriction of the secreting surface to lateral hollows.
3. The transverse and longitudinal extension of the ovuliferous region: the former phenomenon (Siliculoseæ) still further exaggerating characters induced by the original transverse construction.
4. The mutual pressures between a closed calyx and central ovary exerted on "passive" petals and stamens leading to the production of rotated anthers and marginal extensions of the filaments.

In tracing the elaborate mechanical connections of these phenomena, however, the problem of their meaning is admittedly only removed one step further back. We still remain ignorant of the reasons for the initiation of these "active" characters. Nor is there any reason to believe that continued research will ever satisfactorily solve all problems which stretch back into the distant phylogeny of the group. Still, every step cleared up is one gained, and the vague conception of intention is gradually replaced by the view that from an initial tendency, itself probably induced by some physical cause, certain mechanical results will necessarily follow, which will in turn determine the subsequent possibilities of the evolution of the race. Further, the fundamental factors thus deduced should give the key to the systematic arrangement of the family.

FACT AND FANCY IN DIETETICS.

"*What Shall I Eat?*": *a Manual of Rational Feeding.* By Dr. F. X. Gouraud. With a Preface by Prof. A. Gautier. Authorised English translation by F. J. Rebman. Pp. xvi+379. (London: Rebman, Ltd.; New York: Rebman Co., n.d.) Price 6*s.* net.

THERE appears to be a plethora of books on diet just now, but the present volume does not reach the same standard of excellence which is noticeable in several other books on the subject recently reviewed in these columns.

Dr. Gouraud's work contains a certain amount of useful information, it is true, but it is so interwoven with speculations and contradictions that it is not likely to prove useful either to specialists or to the public at large.

The preface tells us it is intended for the business man and the educated housewife among others, but we wonder what the average man of business would make out of the following sentences:—

> "Endogenetic purin is produced by the rejection of nuclein by the organism; its percentage, though variable in each individual, is a fixed quantity in each individual. Exogenetic purin of alimentary origin varies considerably according to diet, and may be reduced to zero by a regimen entirely free of all xanthic bodies."
>
> "Beef is a powerful factor in membral hyperacidity. Its alimentary value, which depends almost wholly on the percentage of fats present in it, is rather slight. It takes only second place to butter, sugar, and rice. Its sole merit from the alimentary standpoint can only be that it supplies within a small compass a comparatively large amount of assimilable nitrogen."
>
> "The third nutritive element in milk is the carbohydrates, *i.e.* lactose or milk sugar. This is a bihexose well known for its diuretic properties which makes the sugar in diabetics. Phosphorus is also abundant, and is present chiefly in the shape of physiological values well differentiated."

Quotations such as the preceding could be multiplied indefinitely. A physiologist will at once detect the gross misstatements of fact; but the man in the street, so far as he can make head or tail out of technical language, will at any rate detect the want of logic and of a knowledge of English composition. The glossary at the end of the book will not help him much, for we learn there that purins are unclean or poisonous substances, that xanthin is a yellow colouring matter, that steapsin is a diastasic ferment, that inosite is a saccharine substance, that casein is a derived albumin, that galactose is lactose, that ammonia contains hydrogen atones, &c., &c.

The translator does not in the greater number of instances know the English equivalents for French technical terms, or for the names of pathological conditions. We select only one gem for special mention; we are told that milk is curdled by the *pressure* of the

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